Adobe®
JPEG 2000 in Adobe Applications

– New Capabilities, Opportunities, and Challenges

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Primary Adobe Activities

- **Cross product: Photoshop, Acrobat, InDesign, etc**
  - technical support
  - marketing and business dev support
- **Adobe rep to outside image activities**
  - JPEG 2000 since member (since1996)
  - ISO digital camera standards committee chair
  - US Head of delegation to PDF standard for archiving
  - Others…

Today's Agenda

- **Adobe and NITF**

- **Government driven Adobe activities**
  - Including JPEG 2000

- **Adobe's use of JPEG 2000**

Adobe and NITF

- **No current support for NITF 2.1**

- **Customer requests for NITF support**
  - Page Layout
  - Report generation
  - Image prep for publication

  - For decision maker, record of action, analysis??
    - Requests are seemingly not for warfighter support

  - ➢ This will drive NITF support into Acrobat Reader

- **Requests for JPEG 2000 support in PDF**
  - NARA, Library Congress, US courts, FDA, etc…
- **Development of a government endorsed archive format for documents and images**
  - PDF/A
  - PDF/Accessible
- **Other Standards efforts**
  - PDF/E, mapping and geo-reference
    - Driving GIS enhancements to PDF
  - PDF/X

- **Data representation**

  …..in a single integrated file…

  - Data types
    - Bit depth (>8)

  - Compression
    - Float/Integer
    - Lossy/lossless selection at decompression
    - Independent access to tiles
    - Progressive ordering flexibility

- **Data representation (JPX file with .jpf extension)**

  …..in a single integrated file…

  - File format
    - ICC color
    - Scaleable color space signaling
    - Metadata
    - Profile signaling
    - Scalable format family up to video
  - Interoperability profiles
  - Client-Server standard

JPEG 2000 commitment at Adobe

- **5+ year standard development commitment**
  - Parts 1, 2, 3, 4, 9 of primary interest
- **3+ year library implementation**
  - Clean room environment dedicated to the standard
- **2+ year plug-in development**
  - Application dependent by application team
- **Deployment is continuing in breath and depth**
  - Not true/false or pass/fail
  - Shades of grey and choices of features

JPEG 2000 current support

- **Acrobat 6.x**
- **Adobe Creative Suite**
  - **Photoshop CS**
  - **Illustrator CS**
  - **InDesign CS**
  - **GoLive CS**
- **Photoshop Elements 2.x**
- **Photoshop 7.x web download plug-in**
- **PDFL**

……more to come

- **Acrobat is Adobe's JPEG 2000 viewing strategy**

- **Creating PDF's with JPEG 2000**
  - Import JP2/JPX into Acrobat full product app
    - Open & view, option to save on close
  - Drag JP2/JPX onto Acrobat full product application
    - Open & view, option to save on close

- **Creating JPEG 2000 from PDF**
  - Rasterize PDF page to JPEG 2000 image
  - Extract JPEG 2000 images to JP2/JPX file

- **<u>Acrobat is Adobe's JPEG 2000 viewing strategy</u>**

- **Using JPEG 2000's in PDF**

  - Print JPEG 2000 to Postscript & GDI printers

  - Raster display of JPEG 2000 image

  - Preflight JPEG 2000 within viewer

  - Roundtrip JPEG 2000 through Adobe apps

Adobe Photoshop

- **JPEG 2000 in Photoshop**
  - Read/Write JPX/JPF and JP2 file format support
  - Features
    - Trade off file size vs. lossless/lossy/quality
    - Color management and metadata control available
    - Region of interest emphasis available
    - Transparency included optionally
    - JP2 compatibility option
    - Progressive order control

Adobe Photoshop Elements

- **What is Elements?**
  - Entry level photo editing and management tool
- **JPEG 2000 in Elements**
  - Read/Write JPX/JPF and JP2 file format support
  - Features
    - Trade off file size vs. lossless/lossy/quality
    - Color management defaulted
    - Metadata and transparency included optionally
    - JP2 compatibility option
    - Progressive order control

Adobe Illustrator

- **What is Illustrator?**
  - Adobe's drawing tool
- **JPEG 2000 in Illustrator**
  - Place JPEG 2000 in Illustrator files
  - Rasterize Illustrator drawings as JPEG 2000 files
  - Create PDF's with embedded JPEG 2000 images

Adobe InDesign

- **What is InDesign?**
  - Adobe's Professional level page layout program
- **JPEG 2000 in InDesign**
  - Place JPEG 2000 images in InDesign files
  - Create PDF's with embedded JPEG 2000 images

Adobe GoLive

- **What is GoLive?**
  - Adobe's web design program
- **JPEG 2000 in GoLive**
  - Place JPEG 2000 in GoLive layouts

Adobe PDFL

- **What is PDFL?**
  - PDFL is Adobe's OEM licensable PDF libraries
  - Provides core Acrobat capabilities in library form

- **JPEG 2000 in PDFL**
  - JPEG 2000 library - one component of PDFL
    - Parse/Generate JPEG 2000 file formats
    - Compress/Decompress JPEG 2000 image data
    - Used internally and by OEMs
    - Mirrors most JPEG 2000 capabilities from Acrobat
      - JPEG 2000 expression is an Acrobat application feature

- **Workflow components**
  - More than imaging and viewing applications
    - Page and Web Layout
    - Archival
- **Chicken and Egg**
  - Layout vs. viewing vs. creation/editing
- **File formats**
  - Special: JP2 vs. JPX vs. JPF vs. JPC vs. JPK
  - General: Quicktime, TIFF, PSD, etc.
  - Container: Acrobat, Frame, ID, GL, etc.
  - Verticals: NITF, DICOM, etc.

- **Broad Adoption**
  - IP issues real and perceived
  - Is it "real"?
- **Hardware support**
  - Needed for "reality"
    - Camera, scanner; more than chips
    - PDA?
- **Browser support**
  - Native support needed (Safari?, IE, Netscape, etc.)
- **Client-Server**
  - Preserve JPEG 2000 scalability over IP

Preservation of JPEG 2000: PDF/A

- **A Profile of Adobe PDF**
  - Standard readers provide access
  - Each government agency can control generation
    - E.g., NGA could require NITF images…(if NITF supported)
- **US, UK, Germany, Sweden + others..**
  - US: NARA, IRS, Lib Congress, US courts, etc
  - US: Satisfies record keeping mandate
- **JPEG 2000 to be included in next version**
  - Based on PDF 1.5 or 1.6
  - Used in Acrobat 6 or the next version…

Future Plans

- **JPEG 2000 is a core component of Adobe products**
- **Development is continuing**
  >...but no dates or announcements
  - Library enhancements
  - Plug-in usage
  - More applications
  - PDF/A
- **Ride the crest of the adoption wave**
  - Not lead or follow….
  - Depth and breath as appropriate
    - Driven by customer and market needs

Summary

- **JPEG 2000 is real**
  - NITF support being considered
- **Broader support needed for viewing and layout**
- **Adobe deployment of JPEG 2000 is planned to continue growing in breath and depth**

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